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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PAIK, SANG YEOP

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/524,837

Applicant(s)

MASHIMA ET AL.

Examiner

Sang Y. Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 July 2006.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-10 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_  
 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_  
 5) ☐ Notice of Informal Patent Application  
 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US 2001/0035403) in view of Muka (US 5,854,468).

Wang shows the metal heater having a plurality of intermediate metal plates, the heater having the thickness of 1 in, which is approximately 25 mm, the surface flatness of .0005 in, which is approximately 12 micron, a heating element interposed between the plates. But, Wang does not show the support device for supporting a wafer over and apart from the heating face and the heating element that extends to an area within 25% from the outer circumference of the metal plate.

Muka shows that it is well known in the art to provide a supporting device such as the substrate mounts or standoffs (46) to support a wafer apart and over the heating surface of a heater. In view of Muka, it would have been obvious to one of ordinary skill in the art to adapt Wang with the recited support device to facilitate more uniform heating transfer from the heating surface to the wafer.

With respect to the recited area, Wang shows the heating element configuration wherein the heating element substantially covers the entire region of the heating plate. Thus, it would have been obvious to one of ordinary skill in the art to adapt Wang with the claimed outer rim to

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substantially cover the heating plate so that its entire heating plate is sufficiently heated to provide a heating surface.

3. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Muka as applied to claims 1 and 10 above, and further in view of Bremer (US 3,110,795) or Futakuchiya et al (US 6,180,931).

Wang in view of Muka shows the heater claimed except the thickness of the intermediate metal plate on the heating side is the same or smaller than that of the metal plate opposite on the heating face side.

Bremer shows that it is known in the art to provide two similar metal plates with a heating element provided there-between to form a metal heater, and Futakuchiya also shows a metal heater having a plurality of metal plates, made of aluminum-copper alloy, with a metal plate on the heating side having a thickness smaller than that of the opposite side.

In view of Bremer or Futakuchiya, it would have been obvious to one of ordinary skill in the art to adapt Wang, as modified by Muka, with the metal plate on the heating side having a smaller thickness to allow a rapid heat transfer to its heating surface, and in view of Futakuchiya, further adapt Wang with the metal plates made of aluminum-alloy which is known in the art to provide a good thermal conductivity.

4. Claims 4-6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Muka as applied to claims 1 and 10 above, and further in view of Sajoto et al (US 6,035,101).

Wang in view of Muka shows the heater claimed except a plurality of through holes.

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Sajoto shows a heater plate with a plurality of through holes (20) for lift pins to lift wafer off the heating surface, a temperature sensor (409), and a support casing (31) for encasing the metal plate and the heating element therein.

In view of Sajoto, it would have been obvious to one of ordinary skill in the art to adapt Wang, as modified by Muka, with a plurality of through holes to conveniently transfer the wafer on and off the heater and also to conveniently measure the temperature of the heating face with the temperature sensor. And, furthermore, it would have been obvious to provide a support casing to conveniently support the heater when the heater is provided in a processing chamber.

With respect to claim 8, Muka shows an intermediate metal plate (50) disposed between the plate (36) and the heating element (34), and Sajoto also shows an intermediate metal plate (12A) disposed between the metal plate and the heating element. In view of Muka or Sajoto, it would have been obvious to one of ordinary skill in the art to adapt Wang with the intermediate plate to further enhance the heat transfer from the heating element to the heating surface.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Muka and Sajoto as applied to claims 4-6, 8 and 9 above, and further in view of Moulene et al (US 5,034,688).

Wang in view of Muka and Sajoto shows the heater claimed except a presser.

Moulene shows a presser (18) disposed on a support case (1a) and the heating face of a heater plate 1(b).

In view of Moulene, it would have been obvious to one of ordinary skill in the art to adapt Wang, as modified by Muka and Sajoto, with the presser to securely assemble the

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individual parts so as to improve good heat transfer and prevent any warping of the heater due to their thermal conductivity.

***Response to Arguments***

6. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S R

Sang Y Paik  
Primary Examiner  
Art Unit 3742

syp